

Task 2.2.1: Lemhi River Site Surveys

Introduction

The Integrated Status and Effectiveness Monitoring Project (ISEMP) seeks to implement a habitat action effectiveness monitoring project in the Lemhi River watershed. A study design for this purpose was developed in 2005 (QCI 2005) and requires the deployment and operation of:

- an adult capture facility on the lower Lemhi River mainstem;
- a rotary screw trap on Hayden Creek near its confluence with the mainstem Lemhi River; and
- five or more extended length PIT tag arrays in mainstem and tributary locations.

A survey of potential locations for this infrastructure was conducted on 23 and 24 August 2006.

Adult Capture Facility

Two locations were surveyed as potential sites for the placement of an adult capture facility; the L6 irrigation diversion structure (Figure 1) and the upriver weir site formerly used for research by the Idaho Cooperative Fish and Wildlife Research Unit (Figure 2). For the purposes of the ISEMP experimental design, the lower site (L6) is preferable, as it is located below all known anadromous salmonid spawning areas. However, the L6 site would require some engineering design and physical modification to serve as a trapping



Figure 1. The L6 irrigation diversion located at river kilometer (rkm) 9 on the mainstem Lemhi River. Note the fish-ladder near the center of the structure.

facility. Operation of the L6 site would require a cooperative agreement with the irrigation district; however language governing the operation of the diversion requires passage monitoring, thus the operation of an adult capture/enumeration facility might be deemed beneficial by the irrigation district.

Alternatively, the upstream weir site could easily be rendered operable and has the benefit of pre-existing upstream and downstream fish handling facilities as well as power. However, selection of this site for the adult trapping facility would be accompanied by several assumptions, namely:

1. that anadromous salmonids do not spawn below the weir;
2. that fish loss (e.g., via prespawning mortality) is minimal below this point; and
3. that sufficient flow can be maintained through the lower river to enable adults to ascend to the structure.

The first two assumptions are likely to be routinely violated.



Figure 2. Abandoned weir site located at rkm 48 on the mainstem Lemhi River.

Existing and Proposed Rotary Screw Traps

Currently, two rotary screw traps are operated within the Lemhi River watershed; at a lower (Figure 3) and an upper (Figure 4) mainstem site. A third screw trap is proposed for Hayden Creek, the largest tributary to the Lemhi. An existing privately owned bridge over Hayden Creek (Figure 5) at rkm 0.5 was identified as the most promising site for the installation and operation of a screw trap. The proposed site benefits from limited access, an existing hardened structure that provides access to both sides of the channel, and is located near the confluence of Hayden Creek with the mainstem Lemhi River.



Figure 3. Existing lower Lemhi River rotary screw trap located at rkm 9 on the mainstem Lemhi River.



Figure 4. Existing upper Lemhi River rotary screw trap located at rkm 49 on the mainstem Lemhi River.



Figure 5. Proposed site for rotary screw trap placement on Hayden Creek at rkm 0.5.

Extended Length PIT tag Arrays

Mainstem Sites

Potential sites for the extended length PIT tag arrays were selected to maximize the efficiency of the sampling program; in short, we endeavored to find locations that are currently accessed by personnel on a regular basis as part of existing sampling activities. Fortunately, for the mainstem PIT tag arrays, the location of the existing lower mainstem Lemhi rotary screw trap (Figure 3) and the abandoned upstream weir site (Figure 2) are ideal locations for PIT tag arrays, and are currently visited on a regular basis by IDFG personnel during ongoing routine monitoring activities.

Tributary Sites

Currently, the Lemhi Conservation Plan lists 17 tributaries that will be considered for reconnection. The Lemhi habitat action effectiveness design prescribes the placement of extended length PIT tag arrays within reconnected tributaries as near as possible to their confluence with the mainstem Lemhi River. Surveys of the channels proposed for reconnection are preliminary, owing to the fact that most of the tributaries are currently dry channels near their confluence with the Lemhi. In general, the majority of the tributaries proposed for reconnection include areas of low gradient near their confluence with the mainstem Lemhi River that are less than 10 meters in width and under one meter in depth. Thus, each of the tributaries contain areas near their confluence with the mainstem Lemhi River that are suitable for the operation of extended length PIT tag arrays. Access to proposed PIT tag array sites is generally provided via diversion access roads. Few sites located near the confluence with the mainstem Lemhi River provide access to electricity, thus the majority of the sites will require autonomous power sources.

Conclusions

The Lemhi River site survey was successful in identifying two potential adult capture sites, one location for a rotary screw trap, and numerous sites for the installation of extended length PIT tag arrays (Table 1). An ideal location was identified for installation of a rotary screw trap on Hayden Creek. Likewise, locations were identified for the installation of mainstem Lemhi extended length PIT tag arrays. The final selection of tributary PIT tag array sites will occur following the prioritization of reconnection locations within the Lemhi Conservation Plan.

Table 1. Location of potential adult capture facilities, existing and proposed rotary screw traps, and potential PIT tag arrays.

Site	Zone	UTM	
		Easting	Northing
Potential Adult Capture Facilities			
L6	12	0278903	5003497
Upper Lemhi Weir Site	12	0292269	4972636
Existing/Proposed Rotary Screw Traps			
L3A Lower Lemhi Screw Trap	12	0278903	5003497
Upper Lemhi Screw Trap Site	12	0292630	4971752
Proposed Hayden Creek Screw Trap Site	12	0292125	4970768
Proposed PIT tag Array Sites			
Big Timber Creek	12	0292706	4971204
Big Eightmile Creek	12	0304718	4955466
Little Eightmile Creek	12	0305236	4956904
Eighteenmile Creek	12	0314975	4949397
Texas Creek	12	0314980	4948483
Hawley Creek	12	0315869	4948437
Canyon Creek	12	0313121	4951138
Mill Creek		NS	NS
Wimpey Creek	12	0285988	4997199
Bohannon Creek	12	0284271	4999084
Kenny Creek	12	0290611	4989394
Agency Creek	12	0291307	4982084
Pattee Creek	12	0291663	4984096
Geertson Creek	12	0281787	5000633
Lee Creek		NS	NS
Big Springs Creek	12	0309247	4954081
Little Springs Creek		NS	NS

NS = not surveyed.

Literature Cited

QCI. Quantitative Consultants, Inc. 2005. Study design for habitat and population status and trend monitoring for the South Fork Salmon River, Idaho and habitat action effectiveness monitoring for the Lemhi River, Idaho. Prepared for National Oceanographic and Atmospheric Administration, Department of Fisheries, Northwest Fisheries Science Center. 61pp.